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Class I, HEXAPODA.

Order I, HYMENOPTERA.

NOTES ON TRICHOGRAMMA PRETIOSA RILEY.

By A. Arsène Girault,

Washington, D. C.

1. *Copulation.* — During the early morning of June 14 (8 A. M.), many adults of this little parasite issued from host eggs and were at once confined under a suitable glass jar. At 10 A. M., observation showed that the males were running very actively among the females, fertilizing them. Both sexes were freely mixed and active. During the act of copulation, the female is almost a passive agent; she often struggles, however, to rid herself of the male. The latter is very persistent in his advances, and is also polygamous,— one has been observed to unite with three females in succession. Sometimes a female is besieged by several males, at which time there is a fierce struggle for possession. Again, a male may unite with the same female twice in succession, with an interval of but two or three seconds between. The copulation is normal for the Hymenoptera, but the position assumed by the male is peculiar. After seizing the female, he takes an inclined position, leaning far back at an angle of about sixty degrees, the tip of the abdomen well under the venter of the female and curved up between her posterior legs. The act lasts for about three and a half seconds. The pair may be motionless or running about. Copulation generally follows soon after emergence, but may be delayed. On the part of the females, it is almost immediately followed by oviposition.

2. *Proportion of the Sexes.* — In an examination of 763 specimens of this insect reared during the entire season from the usual host eggs, the sexes were found to exist in about equal proportions, with a slight preponderance of the females, as shown in the attached table.

TABLE I. *Proportion of Sexes.*

Lot No.	Date, 1904.	No Adults.	Males.	Females	Source.
1	May	26	16	10	Reared.
2	May 6	5	3	2	From 2 hosts.
3	May 23	8	4	4	From 2 hosts.
4	May 23	8	4	4	Captured.
5	June 3	4	2	2	From a single host.
6	June 3	2	1	1	From a single host.
7	June 4–8	28	12	16	From many hosts.
8	June 6	7	2	5	From 4 hosts.
9	June 7	5	3	2	Reared.
10	June 8	3	1	2	From a single host.
11	June 12	2	2	0	From a single host.
12	June 12	2	2	0	From a single host.
13	June 14–16	19	12	7	From 22 hosts.
14	June 22	2	1	1	From a single host.
15	June 22–25	41	28	13	From many hosts.
16	June 27	4	2	2	From a single host.
17	July 1	20	18	2	From many hosts.
18	July 20	2	0	2	From a single host.
19	July 28	10	1	9	From 6 hosts.
20	July 28	12	8	4	Reared.
21	July 29	16	6	10	Reared.
22	July	9	3	6	Reared and captured.
23	Aug. 2	11	6	5	Portion of lot from many hosts.
24	Aug. 2	40	12	28	From 30 hosts.
25	Aug. 21	20	10	10	From many hosts.
26	Sept. 12	33	11	22	From 35 hosts.
27	Sept. 22	83	41	42	From 36 hosts.
28	Sept. 25	111	53	58	From 64 hosts.
29	Oct. 4	8	2	6	From 4 hosts.
30	Oct. 5	44	23	21	From 34 hosts.
31	Oct. 14	24	8	16	Reared.
32	Oct. 18	6	2	4	From 2 hosts.
33	Nov. 4	3	1	2	From a single host.
34	Nov. 7	16	8	8	Collected from reared specimens.
35	Misc. during season	129	57	72	Various, mostly reared.
Totals	.....	763	365	398	

The proportion of the sexes in the variety *nigra* Girault is as 24 males to 27 females. The proportion of the sexes in specimens reared from single hosts may be seen by consulting the table just pre-

sented (lots No. 5, 6, 10, 11, 12, 14, 16, 18 and 33); the sexes vary in relative numbers, but are about equal on an average. In four cases not given in the table, however, hosts collected from the field September 27, three parasities issued from each, the proportion being one male to two females, a total of four males and eight females. From eight eggs of *Alabama argillacea* Hübner, collected in late October from cotton plants, the females generally exceeded the males in number, thus:

Host No.	No. Adults.	Males.	Females.
1	2	0	2
2	2	1	1
3	3	1	2
4	1	0	1
5	2	1	1
6	3	1	2
7	2	1	1
8	3	1	2
Total	18	6	12

As to the relative time of issuing of the sexes, it appears that there is little or no difference. For example, from a lot of host eggs parasitized on June 22, there issued between 1 and 2 P. M., June 30, 2 males and 3 females; at 3 P. M., 3 more females had emerged, and from that hour on both sexes appeared at intervals for some hours. Between the hours of 2 and 3 P. M., June 27, 2 males and 2 females issued from a single host; from 6 to 8 A. M., October 4, 2 males and 6 females appeared from 3 hosts parasitized at the same time, and again from a single host, there issued simultaneously at 3 P. M., June 27, 2 males and 2 females. In the genus *Anaphes* of a closely related family of egg-parasites, it is indicated that the relative issuance of adults is about the same as in *Trichogramma*, whereas in *Telenomus*, more remote, relative issuance of the sexes is more regular, the males preponderating for the first day or so, then the females becoming the more numerous.

3. *Size not Indicative of Sex.*—As a rule the females are larger than the other sex, but this cannot be relied upon to distinguish them, as sometimes the reverse is the case. From a large series of measurements, the following table is adduced, showing the range in size and general average for each sex.

TABLE II. *Relative Size of the Sexes.*

Sex.	Length, mm.			
	Maximum.	Minimum.	Range.	Average.
Male.....	0.45	0.20	0.25	0.34
Female.....	0.50	0.25	0.25	0.38

The foregoing notes are derived from observations made during the Cotton Bollworm Investigations in Texas, 1904, by the Bureau of Entomology, U. S. Department of Agriculture. Unless otherwise specifically stated, the cotton bollworm, *Heliothis obsoleta* Hübner, was the host, and the observations were made at Paris, Texas. These notes are given in abstract by Quaintance and Brues in Bull. No. 50, Bureau Ent., U. S. Dep. Agric., pp. 118, 119.

Class I, HEXAPODA.

Order II, COLEOPTERA.

NEW SCARABÆIDÆ.

BY CHAS. SCHAEFFER,

BROOKLYN, N. Y.

The rearrangement of the Museum collection of Scarabæidæ necessitated the identification and study of recent accessions as well as of some species collected by myself near Brownsville, Texas, and in the Huachuca Mts., Arizona, which were still unnamed.

The collection of the late Ottomar Dietz contains a great number of unnamed species of *Diplotaxis* mostly from New Braunfels, Texas. These I have attempted to identify in connection with those collected by myself, but, without the study of the types and with the descriptions only, poor results were obtained, as Dr. Leconte's descriptions are too short to identify most of the species with any degree of certainty. From the number of unnamed species, most of which are probably new, I have given names to those only, which possess at least some prominent and strong character, which would have been noticed and mentioned by Leconte in his descriptions, had the species been known to him.